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(54) OPTICAL MULTI-LAYERED STRUCTURE AND  
OPTICAL SWITCHING ELEMENT, AND IMAGE  
DISPLAY DEVICE

between the both to switch the quantity of reflection or  
transmission of the ultraviolet light.

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(57) Abstract:

PROBLEM TO BE SOLVED: To provide an optical multi-layered structure which has simple constitution, is small-sized and lightweight, and can switch incident light at a high speed.

SOLUTION: On a substrate 10 made of glass, low-refractive-index layers 12A to 13H made of magnesium fluoride ( $MgF_2$ ) and high-refractive-index layers 13A to 14H made of antimony oxide ( $Sb_2O_3$ ) are laminated by turns. The low-refractive-index layer 12A to the high-refractive-index layer 13D on the side of the substrate 10 form a 1st layer 15 across a gap part 14 (low-refractive-index layer 12E), and the low-refractive-index layer 13E to the high-refractive-index layer 13H on the opposite side to the substrate 10 form a 2nd layer 18. A lower electrode layer 17 and an upper electrode layer 18 are provided which are formed out of metal thin films having windows 17A and 18A for transmitting ultraviolet light and the optical size of the gap part 14 is varied with an electrostatic force generated

